Getting to Zero Net Energy: Streamlined Permitting for Residential Solar PV

Presented by City of Chula Vista's Sustainable Communities Program

May 6, 2015

Sabrina Bornstein, Project Manager, Center for Sustainable Energy

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Sustainable Communities Program

- Provides resources to stakeholders of the Chula Vista built environment to improve compliance with **energy efficiency** and **green building codes** and to promote construction of **sustainable buildings**.
- Part of the **City of Chula Vista's Local Government Partnership program**, which is funded by California utility customers and administered by San Diego Gas & Electric® under the auspices of the California Public Utilities Commission.

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Center for Sustainable Energy™

- Independent nonprofit organization
- Our mission: Accelerating the transition to a sustainable world powered by clean energy
  - Program management
  - Training and education
  - Technical assistance

What is “Zero Net Energy”?

A Zero-Net-Energy Code Building is one where the **net amount of energy produced by on-site renewable energy resources** is equal to **the value of the energy consumed annually by the building**, at the level of a single “project” seeking development **entitlements** and building code **permits**, measured using the California Energy Commission’s Time Dependent Valuation metric.

-- California Energy Commission, 2013 Integrated Energy Policy Report

California's ZNE Goals

- All **new residential construction** will be ZNE by 2020
- All new and 50 percent of existing **state-owned public buildings** will be **retrofit** to ZNE by 2025
- All **new commercial buildings** will be ZNE by 2030
- 50 percent of **existing commercial buildings** will be **retrofit** to ZNE by 2030

Getting to Zero Net Energy – Workshop Series

- **Overview of Permitting, Ordinances and Incentives in Chula Vista**
  - Tues, April 14
- **Introduction to Solar Water Heating**
  - Tues, April 21
- **Streamlined Permitting for Residential Solar PV**
  - Wed, May 6
- **Introduction to Energy Storage**
  - Tues, May 19
- **Electric Vehicle Charging in Buildings**
  - Wed, June 10

Register at www.energycenter.org/events

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STREAMLINED PERMITTING FOR RESIDENTIAL SOLAR PV

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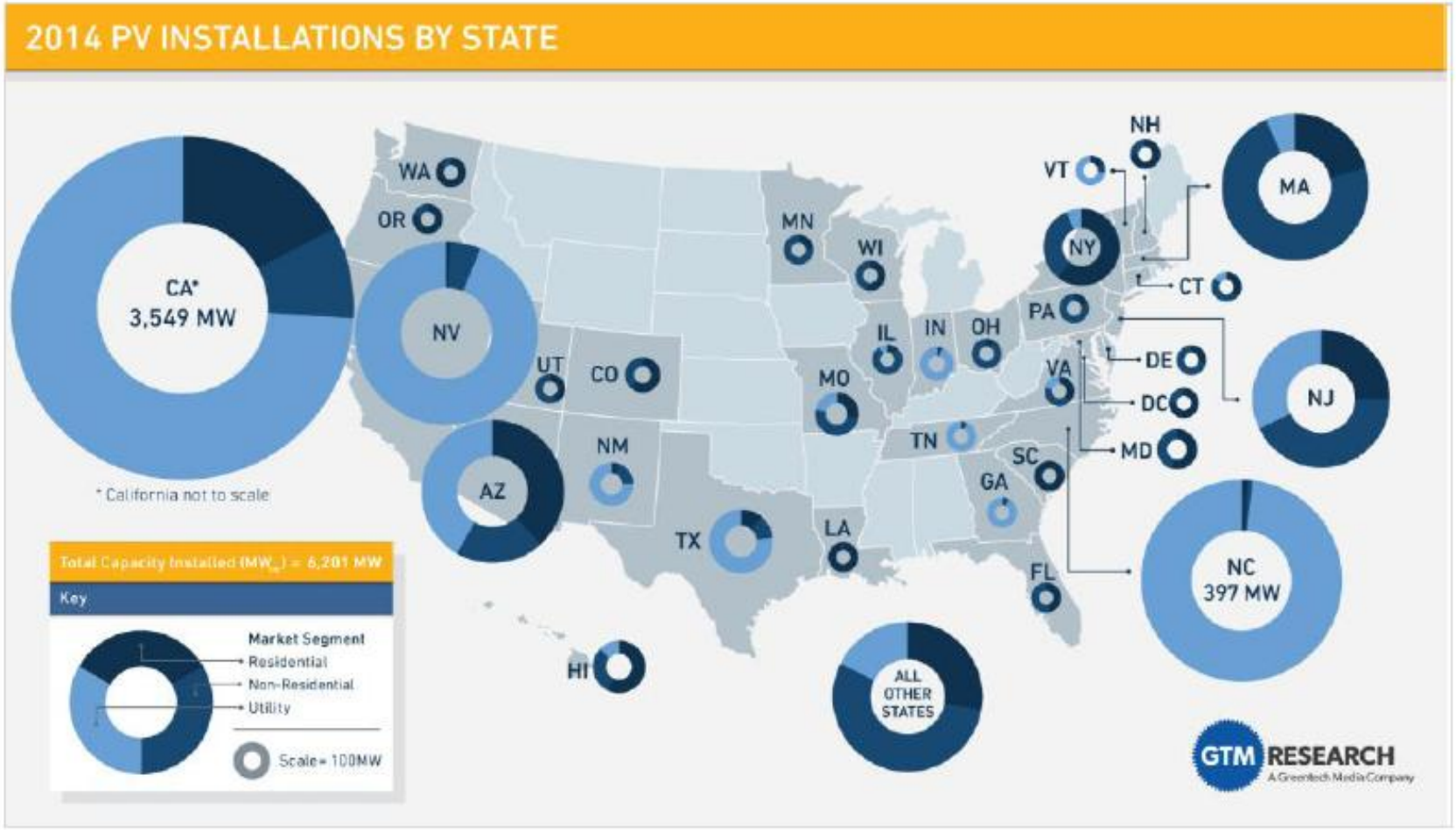
California Climate & Solar Goals

- 1990 GHG levels by 2020 (AB 32)/80% reduction by 2050
- 33% renewables by 2020 (SB 1078)/ 50% by 2030 (Gov. goal/proposed legislation)
- 3,000 MW rooftop solar by 2017 (SB 1)/12,000 MW by 2020 (Gov. goal)

California is a Leader in Solar



Source: U.S. Solar Market Insight Report, 2014 Year in Review, GTM Research and SEIA

Rooftop Solar Challenge: Golden State Solar Impact

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OPTONY Solar for Life™

Streamlined Permitting Reduces Red Tape

- Permitting, inspection, and interconnection accounts for $1,100-$1,750 (NREL) to $2,500 (SunRun)
- PV installation delays as a result of permitting procedures average 3.5 weeks (SunRun) to 8 weeks (CPF)
- Many installers avoid operating in, on average, 3-4 cities each because of hurdles (NREL)

A Statewide Approach

- California is home to 500+ jurisdictions
- Each jurisdiction may have 2-5 different authorities within its boundaries
- Varying levels of knowledge related to solar at different jurisdictions
- Expedite efforts to establish streamlined & standardized permitting

Governor's Solar Permitting Task Force

- Partnership between CSE and the Governor's Office of Planning and Research (OPR)
- Collaboration from Building officials, state agencies, and Industry
- Goal was to reduce cycle time and transaction costs for permitting authorities and solar installers while maintaining high quality and safety standards

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Governor's Solar Permitting Task Force

More than nine months of collaboration from 75 members representing over 60 organizations that include:

- Governor's Office of Planning and Research
- International Code Council
- California Public Utility Commission
- Sungevity
- California Building Officials
- CALSEIA
- California Energy Commission
- City of Chula Vista
- San Jose Fire Department
- Building Standards Commission
- California Building Industry Association
- Sunrun
- City of Fresno
- Division of the State Architect
- City of Walnut Creek
- City of Los Angeles
- Underwriters Laboratories
- Steel Framing Industry Association
- Optony, Inc.
- SolarCity
- City of Bakersfield
- Los Angeles County
- City of Elk Grove
- Brooks Engineering
- Contra Costa County
- City of San Francisco
- CalFire
- Dept. of Housing and Community Development
- State Fire Marshall

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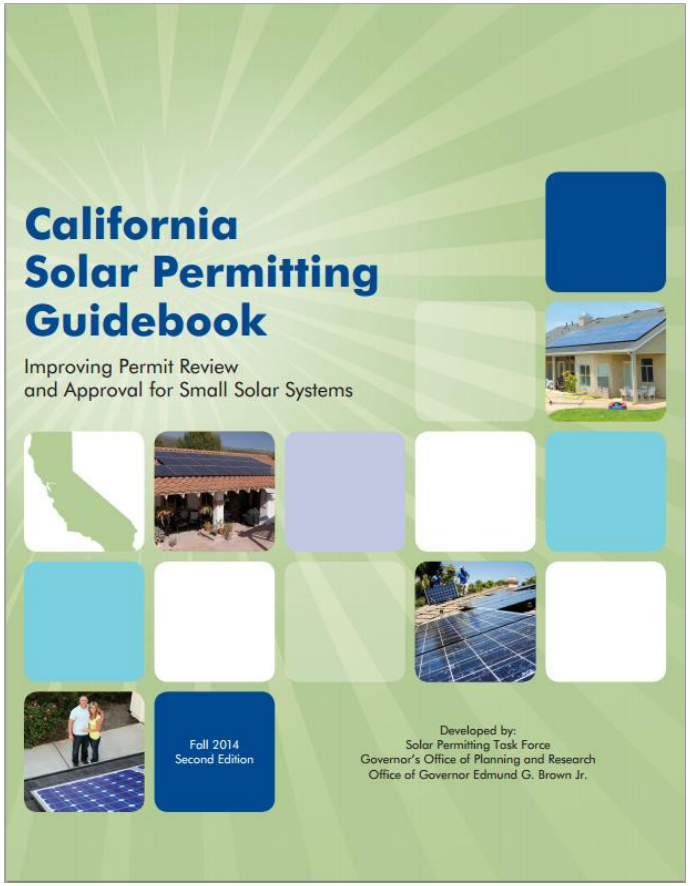
California Solar Permitting Guidebook



- Partnership between CSE and the Governor's Office of Planning and Research (OPR)
- Provides a roadmap for local governments to establish a streamlined permitting processes for small, solar rooftop systems under 10kw
- Guidance on interpretation of codes and standards
- Seven toolkit documents for cities to streamline their permit process

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Purpose and Use of the Guidebook

- Designed to help building owners and solar installers navigate permitting as efficiently as possible
- Practices recommended in this Guidebook apply to permitting agencies of all sizes
- Written for permit applicants with all levels of expertise

Overview

Part 1 **CURRENT LAWS, REGULATIONS AND CODES**: This section explains current legal requirements for solar installations in California.

Part 2 **THE PROJECT APPROVAL PROCESS**: This section describes important aspects of permit review and project inspection.

Part 3 Part 4 **RECOMMENDATIONS FOR EXPEDITED LOCAL SOLAR PERMITTING**: These sections recommend a streamlined local permitting process for small, simple solar PV and solar thermal installations, and provide standard forms that can be used to streamline permitting.

Part 5 **RESOURCES AND INFORMATION**: This section provides informational materials that can help local governments clarify current state requirements for all solar installations.

Focus of the Guidebook

- This Guidebook focuses on the permit review and approval to install a rooftop solar system.

- It does not address zoning, land use approvals or environmental review that may be required for larger solar projects.

- This Guidebook addresses both solar PV and solar water heating (solar thermal) technologies (under construction).

Permitting Guidebook Toolkit

1. Eligibility checklist for systems <10 kw
2. Simplified applicant submittal requirements
3. Standard electrical plans with fire access requirements (2)
4. Well-defined structural criteria for expedited permitting
5. An inspection reference guide
6. One bulletin with state codes for solar installations
7. Implementation guide and sample ordinance

AB 2188 (Muratsuchi)

- Signed into law in September 2014
- Mandates a standardized, streamlined solar permitting process statewide for ≤10kW systems
- Cities must implement ordinance by September 30, 2015

Components:

- Minimum Eligibility Criteria for Expedited Permitting
- Expedited Permitting Ordinance
- Improving the Permitting Process
- Inspection Process
- Changes to HOA Approval Process

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AB 2188 Implementation Guide

- Prepared by Energy Policy Initiatives Center, University of San Diego School of Law
- Provides guidance for implementing AB 2188 in substantial conformance with the Guidebook
- Includes a model ordinance

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Guidebook and AB2188 Training

- Working with building official professional associations to create a series of Guidebook trainings for Q1 and Q2 2015
- Curriculum standardized and developed by CSE
- Training participants will be eligible for continuing education units
- CSE offers technical assistance to local jurisdictions

Chula Vista Permitting Best Practices

- ✓ Permit forms and guide online
- ✓ One inspection required
- ✓ Minimize inspection turnaround and offer convenient inspection scheduling

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CSE Resources and Contact Information

Solar Permitting Guidebook:

energycenter.org/solarguidebook

solarpermitting@energycenter.org

PACE:

energycenter.org/pace

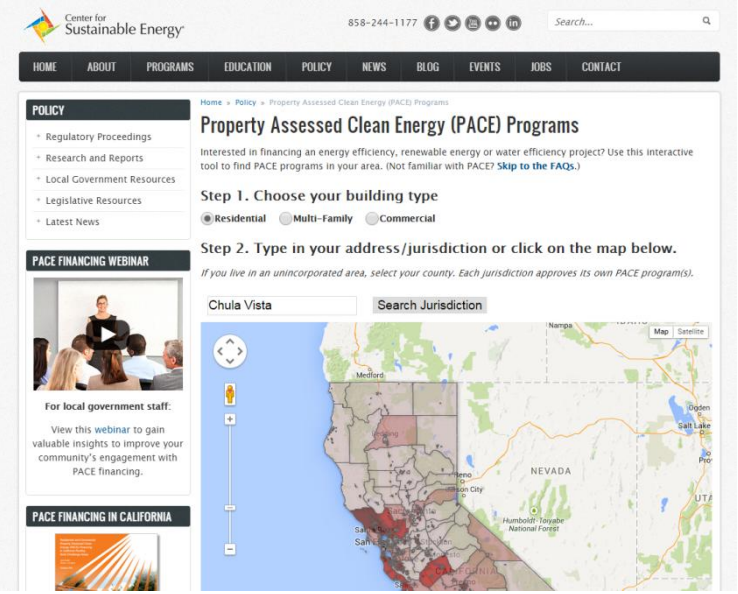
California Solar Initiative:

CSI@energycenter.org

energycenter.org/california-solar-initiative

Webinars:

energycenter.org/localgov



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Rebates and Incentives

- CSI Residential Solar: funding exhausted
- CSI Commercial Solar: Wait list created as of 2/5/2015 (application fee not due at this time)
- New Solar Homes Partnership (CEC)
- 30% Federal Tax Credit is available through 12/31/2016. Consult with your tax professional.

Questions?

Sabrina Bornstein

Project Manager

(213) 805-7267

Sabrina.Bornstein@energycenter.org

Chula Vista Solar Permit Streamlining

Wednesday, May 6, 2015 12-1:30pm

Conference Room: B112, Building C

Website

- Online Resources:
  - State Requirement (SB 2188)
  - City Code (CVMC 15.24.065)
  - Forms and Guide

www.chulavistaca.gov/departments/development-services/building/build-green

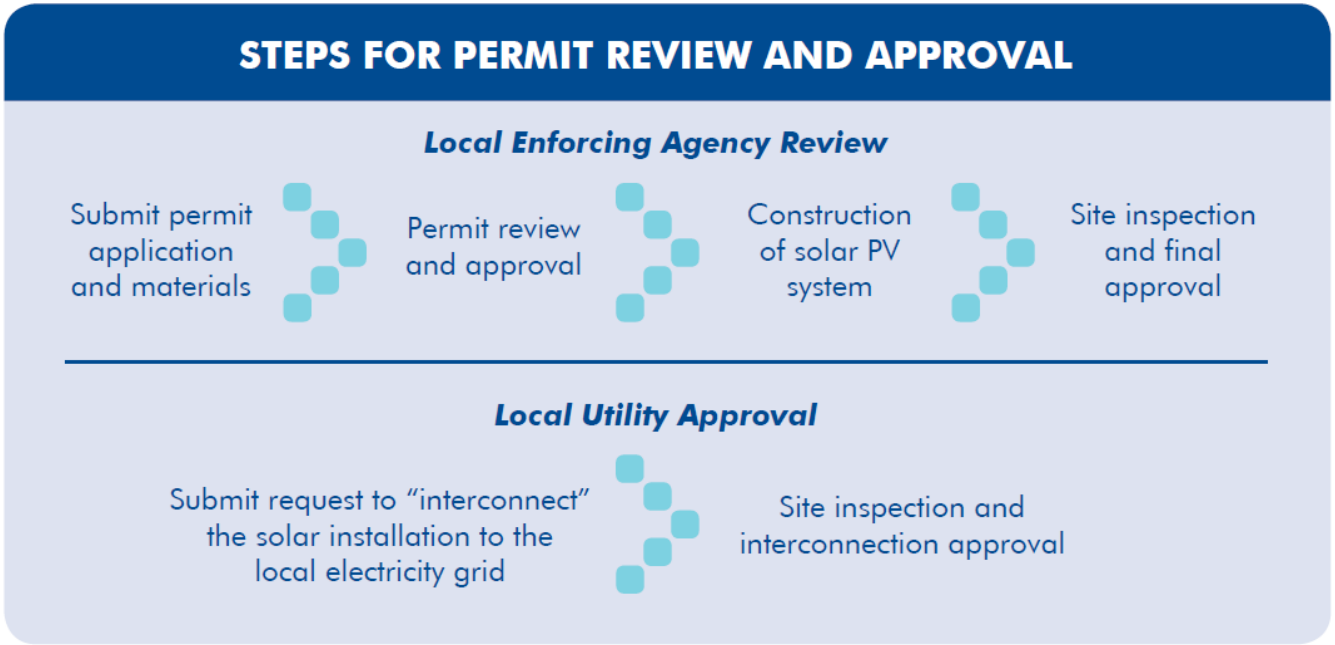
Building Department (619)-691-5272

CVMC 15.24.065 Photovoltaic Pre-wiring Requirements

All new residential units shall include electrical conduit specifically designed to allow the later installation of a photovoltaic (PV) system which utilizes solar energy as a means to provide electricity.

Review Process

- Current City Process (10 Days)
- Proposed (≤ 5 Days)

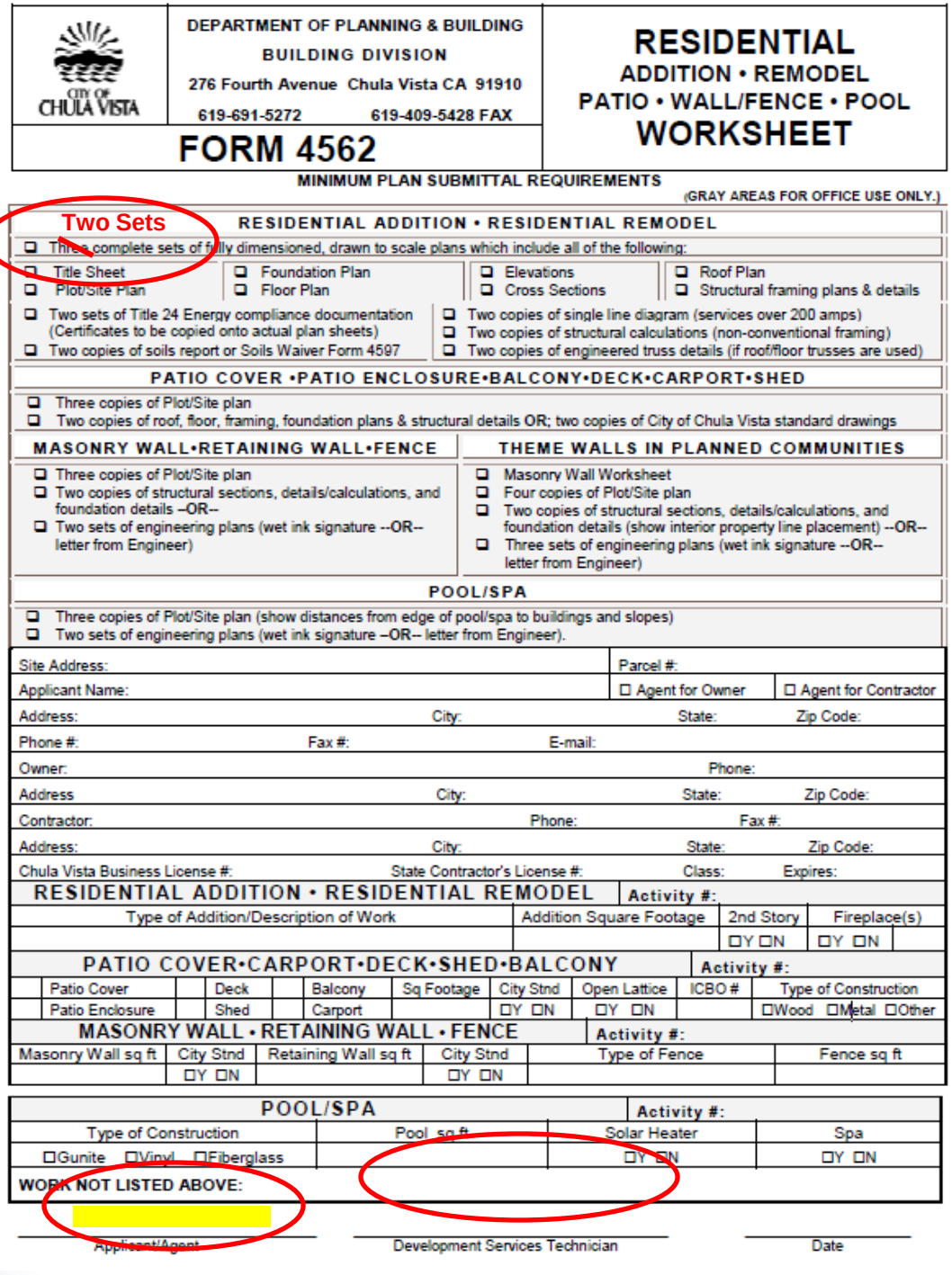


Solar PV Forms

- Permit (Residential)

Fees:

- $250 (Solar PV)
- $234.75 (Minor upgrade)



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DEPARTMENT OF PLANNING & BUILDING
BUILDING DIVISION
276 Fourth Avenue Chula Vista CA 91910
619-691-5272 619-409-5428 FAX

FORM 4562

RESIDENTIAL
ADDITION • REMODEL
PATIO • WALL/FENCE • POOL
WORKSHEET

MINIMUM PLAN SUBMITTAL REQUIREMENTS

(GRAY AREAS FOR OFFICE USE ONLY.)

Two Sets

RESIDENTIAL ADDITION • RESIDENTIAL REMODEL

☐ Three complete sets of fully dimensioned, drawn to scale plans which include all of the following:

☐ Title Sheet ☐ Plot/Site Plan ☐ Foundation Plan ☐ Floor Plan ☐ Elevations ☐ Cross Sections ☐ Roof Plan ☐ Structural framing plans & details

☐ Two sets of Title 24 Energy compliance documentation (Certificates to be copied onto actual plan sheets)
☐ Two copies of soils report or Soils Waiver Form 4597
☐ Two copies of single line diagram (services over 200 amps)
☐ Two copies of structural calculations (non-conventional framing)
☐ Two copies of engineered truss details (if roof/floor trusses are used)

PATIO COVER •PATIO ENCLOSURE•BALCONY•DECK•CARPORT•SHED

☐ Three copies of Plot/Site plan
☐ Two copies of roof, floor, framing, foundation plans & structural details OR; two copies of City of Chula Vista standard drawings

MASONRY WALL•RETAINING WALL•FENCE

☐ Three copies of Plot/Site plan
☐ Two copies of structural sections, details/calculations, and foundation details –OR--
☐ Two sets of engineering plans (wet ink signature --OR-- letter from Engineer)

THEME WALLS IN PLANNED COMMUNITIES

☐ Masonry Wall Worksheet
☐ Four copies of Plot/Site plan
☐ Two copies of structural sections, details/calculations, and foundation details (show interior property line placement) --OR--
☐ Three sets of engineering plans (wet ink signature --OR-- letter from Engineer)

POOL/SPA

☐ Three copies of Plot/Site plan (show distances from edge of pool/spa to buildings and slopes)
☐ Two sets of engineering plans (wet ink signature –OR-- letter from Engineer).

Site Address:		Parcel #:	
Applicant Name:		☐ Agent for Owner	☐ Agent for Contractor
Address:	City:	State:	Zip Code:
Phone #:	Fax #:	E-mail:	
Owner:		Phone:	
Address	City:	State:	Zip Code:
Contractor:	Phone:	Fax #:	
Address:	City:	State:	Zip Code:
Chula Vista Business License #:	State Contractor's License #:	Class:	Expires:

RESIDENTIAL ADDITION • RESIDENTIAL REMODEL — Activity #:

Type of Addition/Description of Work	Addition Square Footage	2nd Story	Fireplace(s)
		☐Y ☐N	☐Y ☐N

PATIO COVER•CARPORT•DECK•SHED•BALCONY — Activity #:

	Patio Cover		Deck		Balcony	Sq Footage	City Stnd	Open Lattice	ICBO #	Type of Construction
	Patio Enclosure		Shed		Carport		☐Y ☐N	☐Y ☐N		☐Wood ☐Metal ☐Other

MASONRY WALL • RETAINING WALL • FENCE — Activity #:

Masonry Wall sq ft	City Stnd	Retaining Wall sq ft	City Stnd	Type of Fence	Fence sq ft
	☐Y ☐N		☐Y ☐N		

POOL/SPA — Activity #:

Type of Construction	Pool sq ft	Solar Heater	Spa
☐Gunite ☐Vinyl ☐Fiberglass		☐Y ☐N	☐Y ☐N

WORK NOT LISTED ABOVE:

Applicant/Agent _____ Development Services Technician _____ Date _____

Guide to Streamlined Rooftop Solar PV

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Development Services Department
Building Division | Development Processing

Solar Requirements for Streamlined Rooftop Solar Photovoltaic Permitting 10KW or Less in One-and Two-Family Dwellings

This information bulletin is published to guide applicants through a streamlined permitting process for solar photovoltaic (PV) projects 10 kW in size or smaller. This bulletin provides information about submittal requirements for plan review, required fees and inspections.

1. Approval Requirements

The following permits are required to install a small residential rooftop solar PV system with a maximum power output of 10 kW or less:

a) Building permit; Residential Addition/Alteration.

b) Minor electrical permit if electrical panel upgrade is required. (Specify on plans)

Planning review and Fire Department approval are not required for small residential rooftop solar PV installations of this size.

2. Submittal Requirements

a) Completed permit application form. This permit application form can be downloaded at http://www.chulavistaca.gov/departments/development-services/forms-specifications .

b) Demonstrate compliance with the eligibility checklist for expedited permitting. These criteria can be

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Development Services Department
Building Division | Development Processing

Eligibility Checklist for Streamlined Small Residential Rooftop Solar Permitting

These criteria are intended for streamlined solar permitting process. If any items are checked NO, revise design to fit within Eligibility Checklist, otherwise permit application may go through standard process.

General Requirements

A.	System size is 10 kW AC CEC rating or less	☐ Y	☐ N
B.	The solar array is roof-mounted on one- or two-family dwelling or accessory structure	☐ Y	☐ N
C.	The solar panel/module arrays will not exceed the maximum legal building height	☐ Y	☐ N
D.	Solar system is utility interactive and without battery storage	☐ Y	☐ N
E.	Permit application is completed and attached	☐ Y	☐ N
F.	Permit pulled by a C-46 (Solar Contractor) or C-10 (Electrical Contractor)	☐ Y	☐ N

Electrical Requirements

A.	No more than four photovoltaic module strings are connected to each Maximum PowerPoint Tracking (MPPT) input where source circuit fusing is included in the inverter	☐ Y	☐ N
	1) No more than two strings per MPPT input where source circuit fusing is not included	☐ Y	☐ N
	2) Fuses (if needed) are rated to the series fuse rating of the PV module	☐ Y	☐ N
	3) No more than one noninverter-integrated DC combiner is utilized per inverter	☐ Y	☐ N
B.	For central inverter systems: No more than two inverters are utilized	☐ Y	☐ N
C.	The PV system is interconnected to a single-phase AC service panel of nominal 120/240 Vac with a bus bar rating of 225 A or less	☐ Y	☐ N
D.	The PV system is connected to the load side of the utility distribution equipment	☐ Y	☐ N
E.	A Solar PV Standard Plan and supporting documentation, that conform to the standard plans contained in the most current version of the *California Solar Permitting Guidebook* adopted by the Governor's Office of Planning and Research, is completed and attached	☐ Y	☐ N
F.	The existing electrical system including existing line, load, ground and bonding wiring as well as main panel and subpanel sizes are adequately sized, based on the existing electrical system's current use, to carry all new PV electrical loads.	☐ Y	☐ N

Structural Requirements

	A completed Structural Criteria for Residential Flush-mount Solar Arrays and supporting documentation is attached.	☐ Y	☐ N

Fire Safety Requirements

A.	Clear access and ventilation pathways provided	☐ Y	☐ N
B.	Fire classification solar system is provided	☐ Y	☐ N
C.	All required markings and labels are provided including a directory plaque as required by the San Diego Area Electrical News Letters Article 690.	☐ Y	☐ N
D.	A diagram of the roof layout of all panels, modules, clear access and ventilation pathways and approximate locations of electrical disconnecting means and roof access points is completed and attached	☐ Y	☐ N

Job Address: _____ Permit #: _____

Contractor/Installer: _____ License # & Class: _____

Signature: _____ Date: _____ Phone #: _____

www.chulavistaca.gov/departments/development-services/building/build-green

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Structural Criteria Checklist

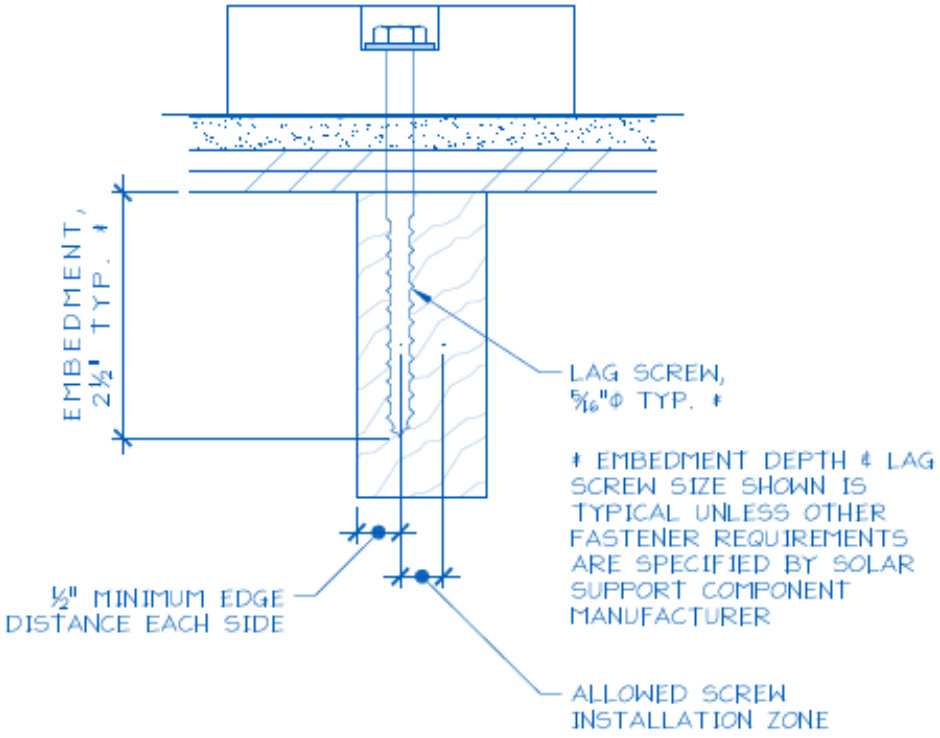

Figure 2. Typical Anchor with Lag Screw Attachment.

Figure 1. Sample Solar Panel Array and Anchor Layout Diagram (Roof Plan).

E. Is a roof plan of the module and anchor layout attached? (see Figure 1) ☐ Y ☐ N

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Thank you for attending!

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